FIG. 1A
(CONVENTIONAL ART)

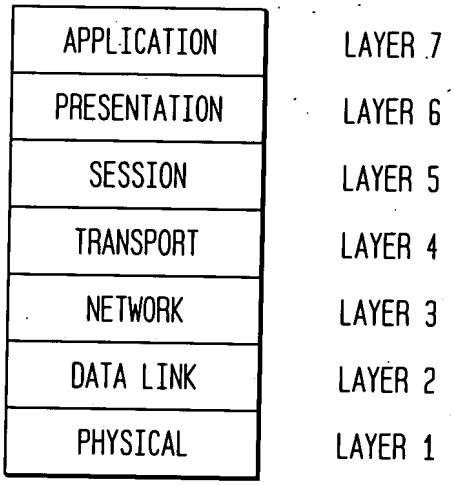


FIG. 1B
(CONVENTIONAL ART)

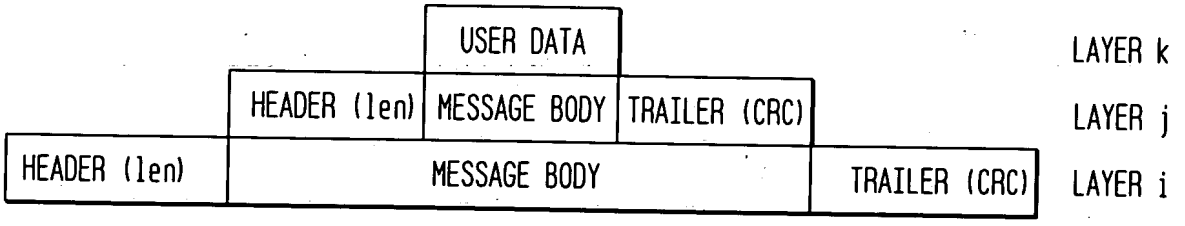


FIG. 2

(CONVENTIONAL ART)

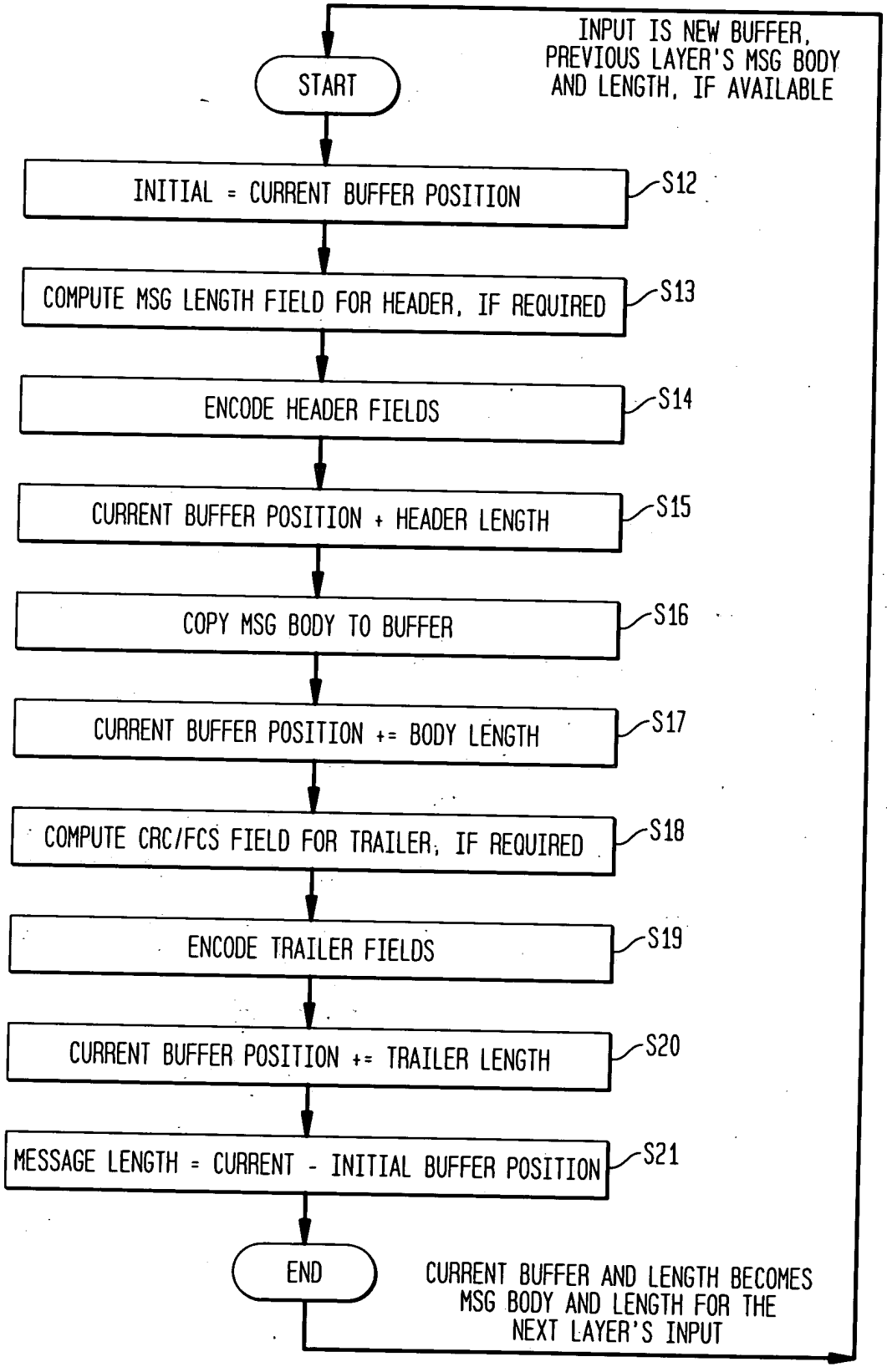
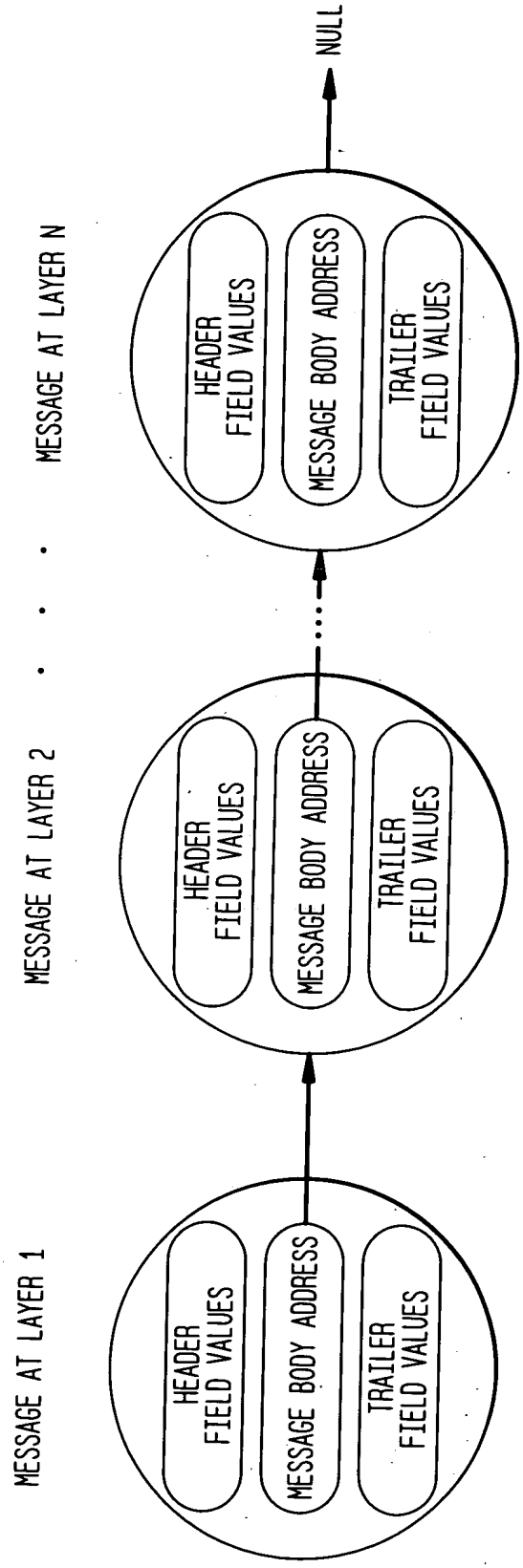


FIG. 3


MESSAGE AT LAYER 1
HEADER FIELD VALUES
MESSAGE BODY ADDRESS
TRAILER FIELD VALUES
MESSAGE AT LAYER 2
HEADER FIELD VALUES
MESSAGE BODY ADDRESS
TRAILER FIELD VALUES
MESSAGE AT LAYER N
HEADER FIELD VALUES
MESSAGE BODY ADDRESS
TRAILER FIELD VALUES
NULL

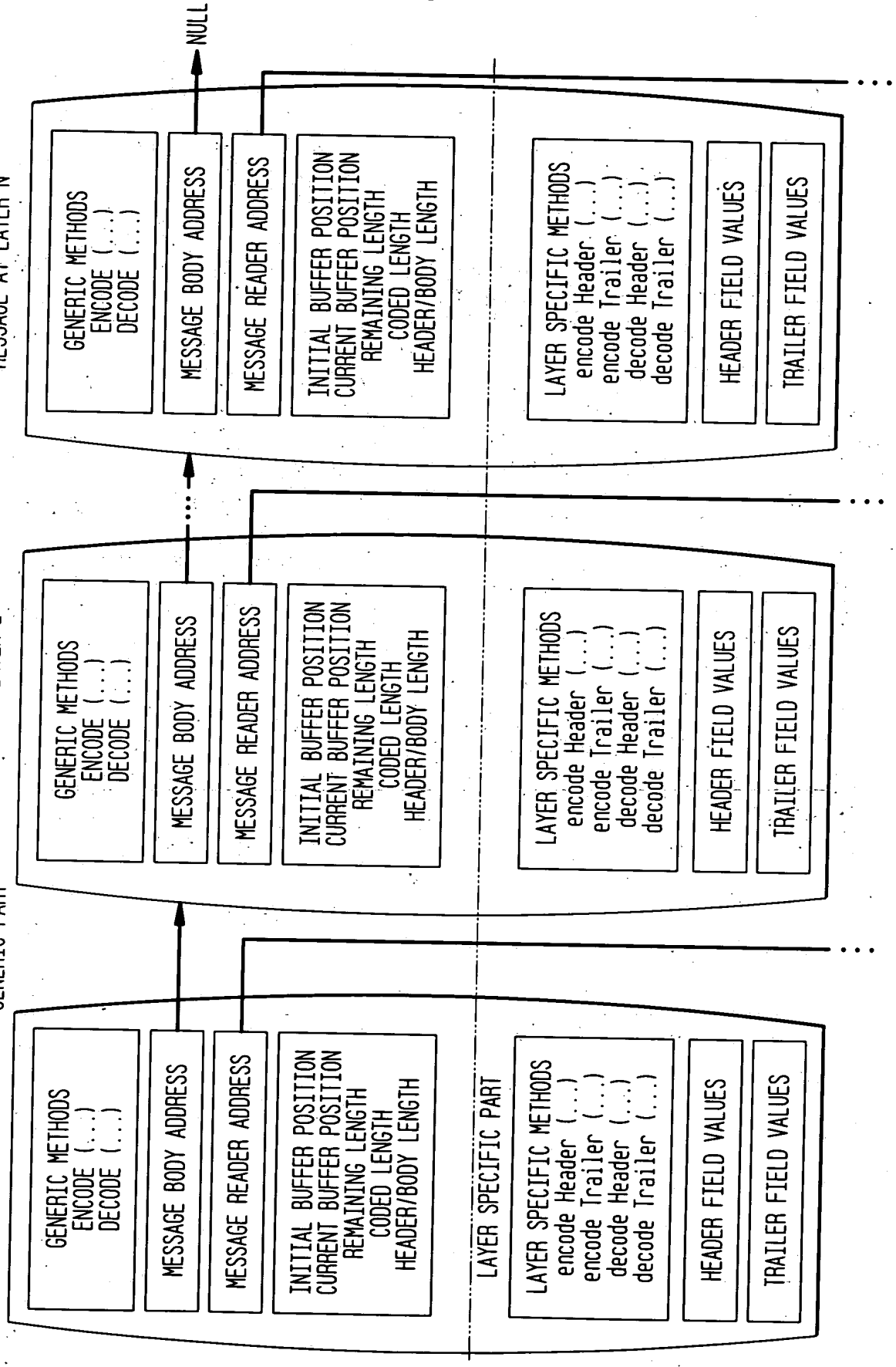

CONTEXT OF MESSAGE AT LAYER 1
CONTEXT OF MESSAGE AT LAYER 2
CONTEXT OF MESSAGE AT LAYER N
NULL
GENERIC PART
LAYER SPECIFIC PART
GENERIC METHODS ENCODE (...) DECODE (...)
MESSAGE BODY ADDRESS
MESSAGE READER ADDRESS
INITIAL BUFFER POSITION CURRENT BUFFER POSITION REMAINING LENGTH CODED LENGTH HEADER/BODY LENGTH
LAYER SPECIFIC METHODS encode Header (...) encode Trailer (...) decode Header (...) decode Trailer (...)
HEADER FIELD VALUES
TRAILER FIELD VALUES

FIG. 4A

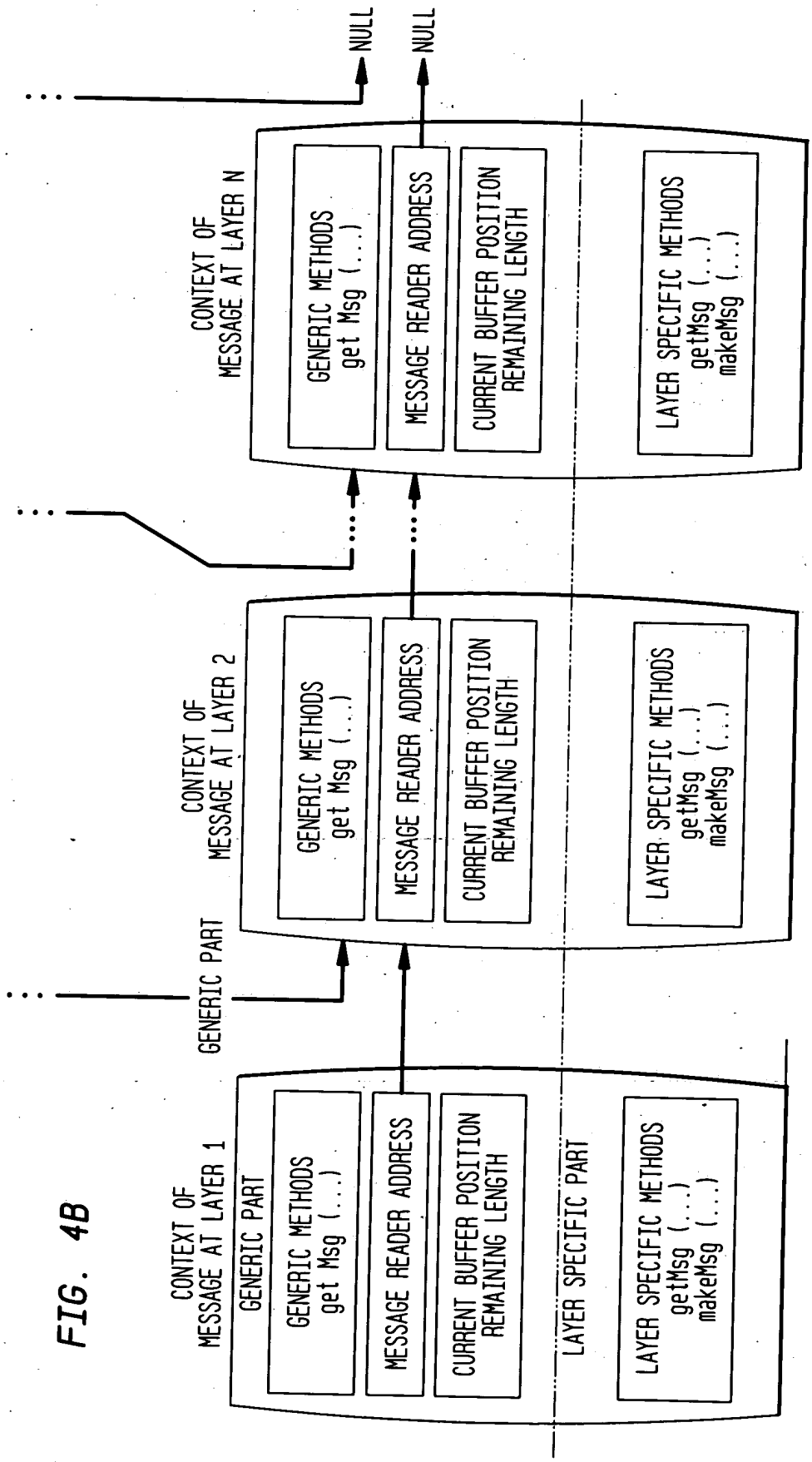

NULL
NULL
CONTEXT OF MESSAGE AT LAYER N
GENERIC METHODS get Msg (...)
MESSAGE READER ADDRESS
CURRENT BUFFER POSITION REMAINING LENGTH
LAYER SPECIFIC METHODS getMsg (...) makeMsg (...)
CONTEXT OF MESSAGE AT LAYER 2
GENERIC METHODS get Msg (...)
MESSAGE READER ADDRESS
CURRENT BUFFER POSITION REMAINING LENGTH
LAYER SPECIFIC METHODS getMsg (...) makeMsg (...)
GENERIC PART
CONTEXT OF MESSAGE AT LAYER 1
GENERIC PART
GENERIC METHODS get Msg (...)
MESSAGE READER ADDRESS
CURRENT BUFFER POSITION REMAINING LENGTH
LAYER SPECIFIC PART
LAYER SPECIFIC METHODS getMsg (...) makeMsg (...)

FIG. 4B

FIG. 5A

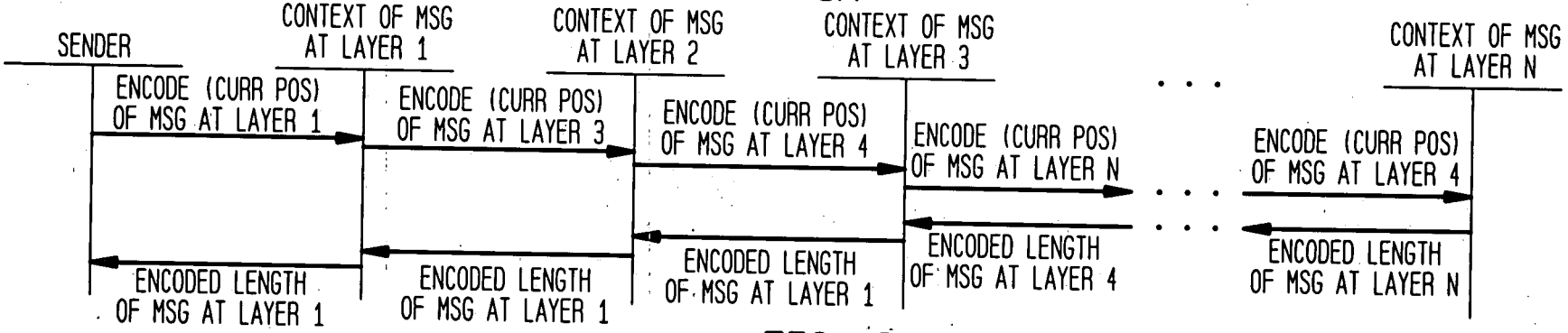

SENDER
CONTEXT OF MSG AT LAYER 1
CONTEXT OF MSG AT LAYER 2
CONTEXT OF MSG AT LAYER 3
CONTEXT OF MSG AT LAYER N
ENCODE (CURR POS) OF MSG AT LAYER 1
ENCODE (CURR POS) OF MSG AT LAYER 3
ENCODE (CURR POS) OF MSG AT LAYER 4
ENCODE (CURR POS) OF MSG AT LAYER N
ENCODE (CURR POS) OF MSG AT LAYER 4
ENCODED LENGTH OF MSG AT LAYER 1
ENCODED LENGTH OF MSG AT LAYER 1
ENCODED LENGTH OF MSG AT LAYER 1
ENCODED LENGTH OF MSG AT LAYER 4
ENCODED LENGTH OF MSG AT LAYER N

FIG. 5B

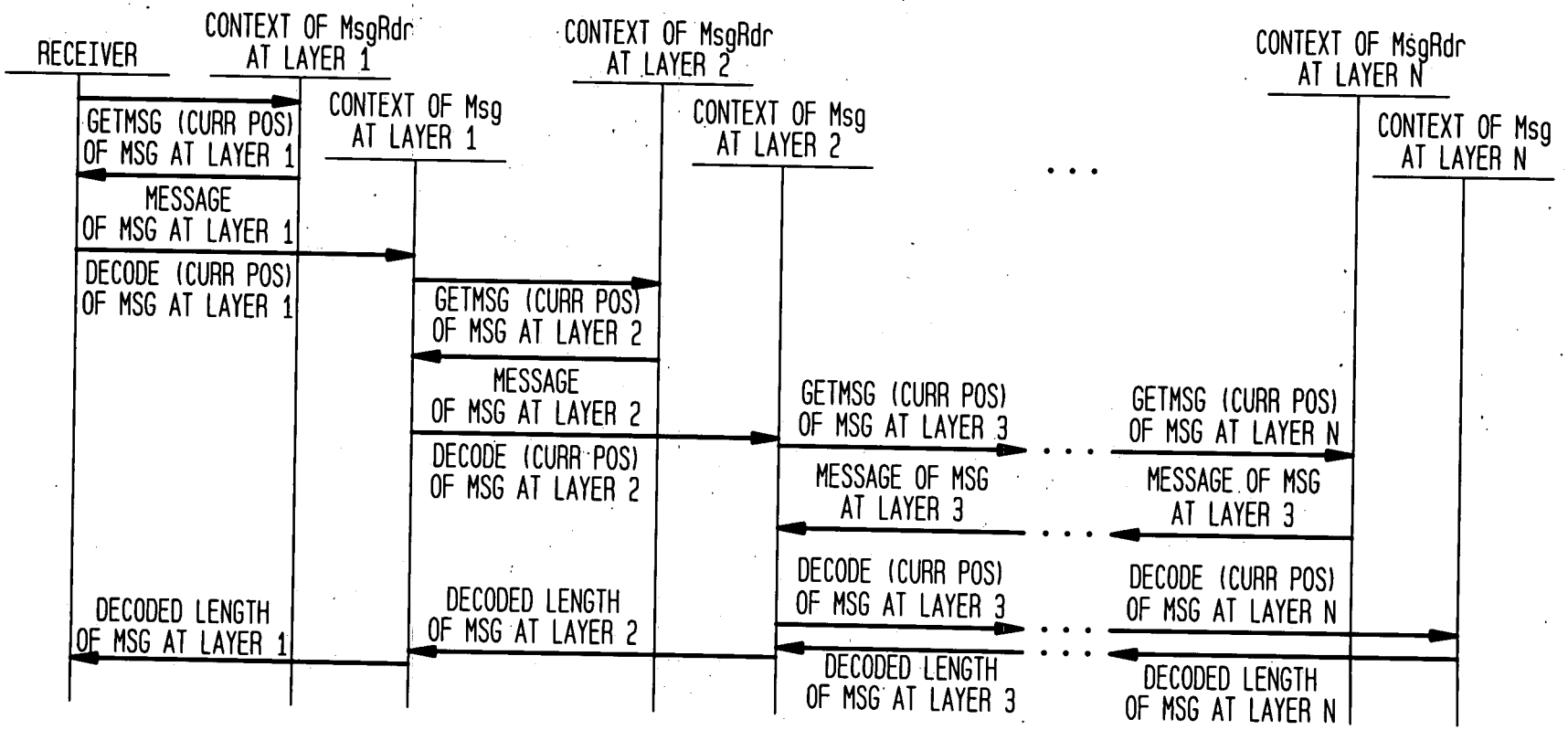

RECEIVER
CONTEXT OF MsgRdr AT LAYER 1
CONTEXT OF MsgRdr AT LAYER 2
CONTEXT OF MsgRdr AT LAYER N
CONTEXT OF Msg AT LAYER 1
CONTEXT OF Msg AT LAYER 2
CONTEXT OF Msg AT LAYER N
GETMSG (CURR POS) OF MSG AT LAYER 1
MESSAGE OF MSG AT LAYER 1
DECODE (CURR POS) OF MSG AT LAYER 1
GETMSG (CURR POS) OF MSG AT LAYER 2
MESSAGE OF MSG AT LAYER 2
DECODE (CURR POS) OF MSG AT LAYER 2
GETMSG (CURR POS) OF MSG AT LAYER 3
GETMSG (CURR POS) OF MSG AT LAYER N
MESSAGE OF MSG AT LAYER 3
MESSAGE OF MSG AT LAYER 3
DECODE (CURR POS) OF MSG AT LAYER 3
DECODE (CURR POS) OF MSG AT LAYER N
DECODED LENGTH OF MSG AT LAYER 1
DECODED LENGTH OF MSG AT LAYER 2
DECODED LENGTH OF MSG AT LAYER 3
DECODED LENGTH OF MSG AT LAYER N

FIG. 6

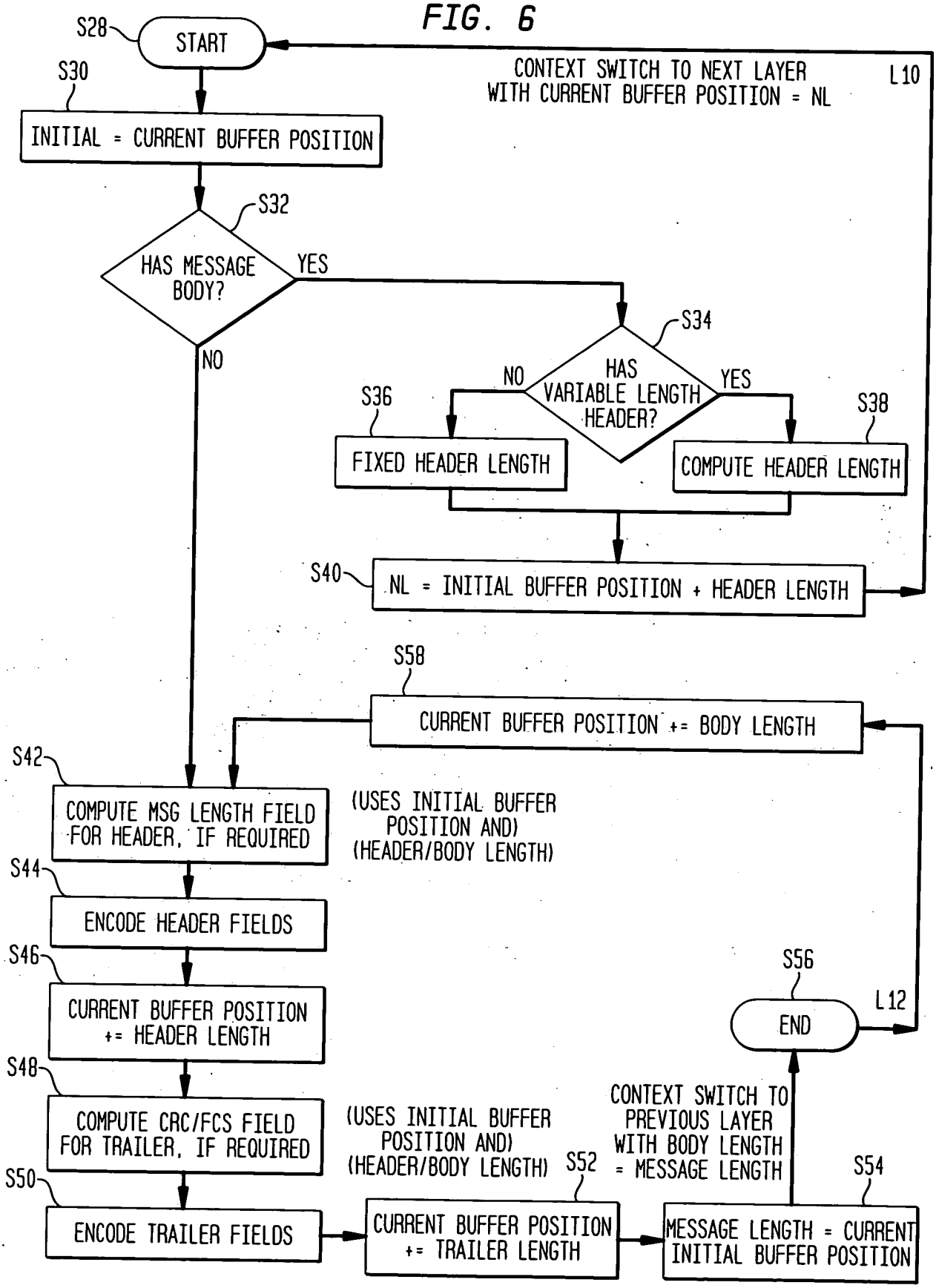
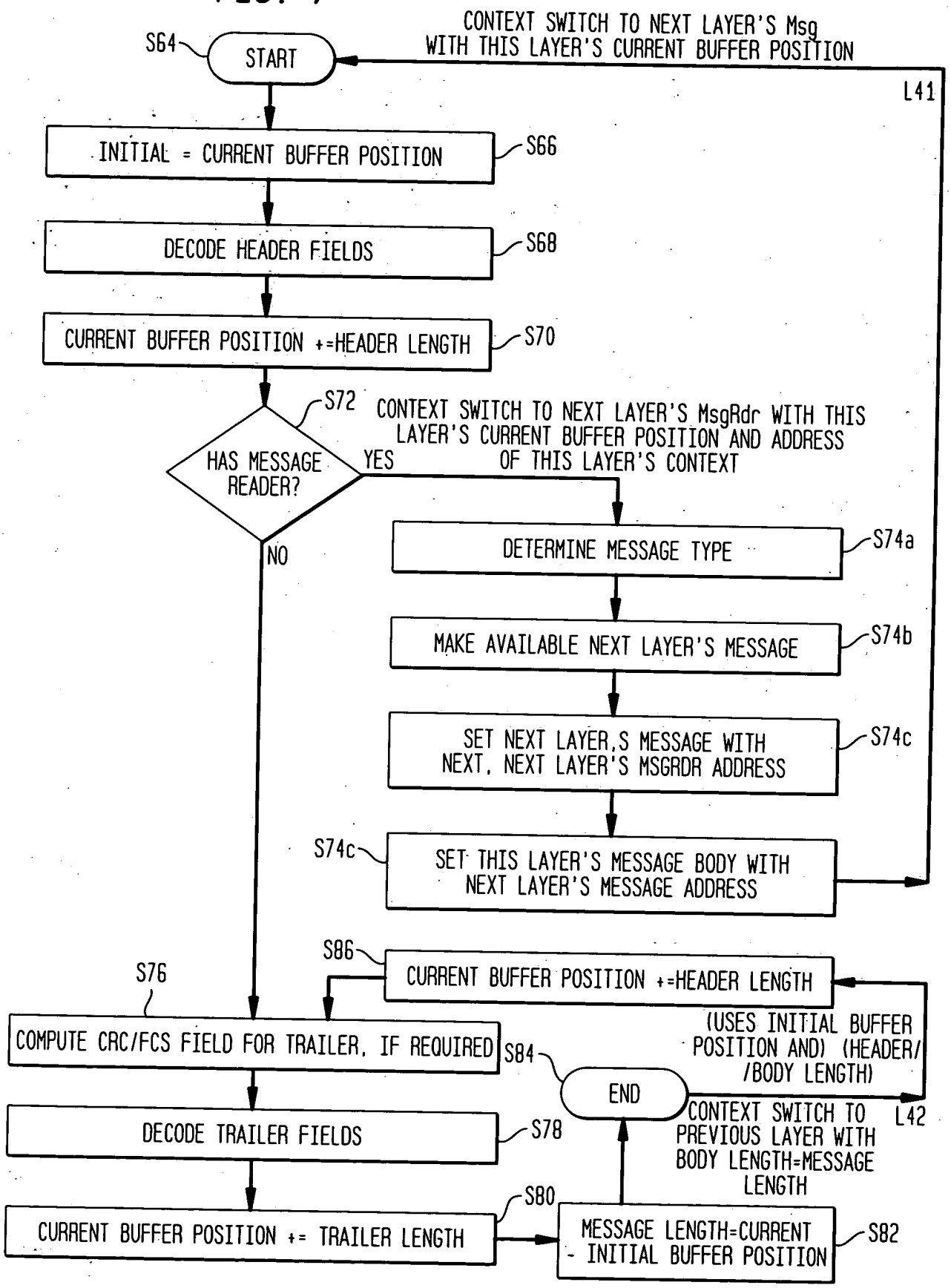

S28
START
S30
INITIAL = CURRENT BUFFER POSITION
S32
HAS MESSAGE BODY?
YES
NO
S34
HAS VARIABLE LENGTH HEADER?
NO
YES
S36
FIXED HEADER LENGTH
S38
COMPUTE HEADER LENGTH
S40
NL = INITIAL BUFFER POSITION + HEADER LENGTH
CONTEXT SWITCH TO NEXT LAYER WITH CURRENT BUFFER POSITION = NL
L10
S58
CURRENT BUFFER POSITION += BODY LENGTH
S42
COMPUTE MSG LENGTH FIELD FOR HEADER, IF REQUIRED
(USES INITIAL BUFFER POSITION AND) (HEADER/BODY LENGTH)
S44
ENCODE HEADER FIELDS
S46
CURRENT BUFFER POSITION += HEADER LENGTH
S48
COMPUTE CRC/FCS FIELD FOR TRAILER, IF REQUIRED
(USES INITIAL BUFFER POSITION AND) (HEADER/BODY LENGTH)
S50
ENCODE TRAILER FIELDS
S52
CURRENT BUFFER POSITION += TRAILER LENGTH
CONTEXT SWITCH TO PREVIOUS LAYER WITH BODY LENGTH = MESSAGE LENGTH
S54
MESSAGE LENGTH = CURRENT INITIAL BUFFER POSITION
S56
END
L12

FIG. 7


S64
START
CONTEXT SWITCH TO NEXT LAYER'S Msg WITH THIS LAYER'S CURRENT BUFFER POSITION
L41
INITIAL = CURRENT BUFFER POSITION
S66
DECODE HEADER FIELDS
S68
CURRENT BUFFER POSITION +=HEADER LENGTH
S70
S72
HAS MESSAGE READER?
YES
CONTEXT SWITCH TO NEXT LAYER'S MsgRdr WITH THIS LAYER'S CURRENT BUFFER POSITION AND ADDRESS OF THIS LAYER'S CONTEXT
NO
DETERMINE MESSAGE TYPE
S74a
MAKE AVAILABLE NEXT LAYER'S MESSAGE
S74b
SET NEXT LAYER,S MESSAGE WITH NEXT, NEXT LAYER'S MSGRDR ADDRESS
S74c
S74c
SET THIS LAYER'S MESSAGE BODY WITH NEXT LAYER'S MESSAGE ADDRESS
S86
CURRENT BUFFER POSITION +=HEADER LENGTH
S76
COMPUTE CRC/FCS FIELD FOR TRAILER, IF REQUIRED
(USES INITIAL BUFFER POSITION AND) (HEADER/ /BODY LENGTH)
S84
END
L42
DECODE TRAILER FIELDS
S78
CONTEXT SWITCH TO PREVIOUS LAYER WITH BODY LENGTH=MESSAGE LENGTH
S80
CURRENT BUFFER POSITION += TRAILER LENGTH
MESSAGE LENGTH=CURRENT - INITIAL BUFFER POSITION
S82